



STIC Search Report

EIC 2100

STIC Database Tracking Number: 135950

TO: Michael B Holmes
Location: RND,5A49
Art Unit : 2121
Tuesday, October 26, 2004

Case Serial Number: 09/873510

From: David Holloway
Location: EIC 2100
RND 4B19
Phone: 272-3528

david.holloway@uspto.gov

Search Notes

Dear Examiner Holmes,

Attached please find your search results for above-referenced case.
Please contact me if you have any questions or would like a re-focused search.

David

Set	Items	Description
S1	564344	NEURAL() (NETWORK? OR NET OR NETS OR SYSTEM OR SYSTEMS) OR - NEUROMORPHIC? OR ANS OR (MACHINE OR COMPUTER) () (LEARN? OR TRA- IN?)
S2	3950977	INDIVIDUAL? OR CHROMOSOME? OR GENETIC? OR GENE OR GENES OR SPECIFIC() INSTANCE
S3	5436570	SELECTION() SPACE? OR GROUP? OR POOL OR POOLS OR POPULATION?
S4	10201386	CONTROL? OR TRAIN? OR LEARN? OR EVOLV? OR EVOLUTION? OR PA- RAEVOL? OR GENERATION
S5	7405912	SPACE? OR SUBSPACE? OR LIMIT? OR BOUNDAR? OR MAXIMUM? OR M- INIMUM?
S6	8987204	CHARACTERISTIC? OR PREFERENC? OR TECHNIQ? OR PERSONALIT? OR JOB OR JOBS OR TASK?
S7	39061	S1(3N) (MOTOR? OR MACHINE? OR DEVICE? OR ENGINE? OR AUTOMOT- IV? OR AUTOMOBIL? OR APPARATUS OR POWER() TRAIN? OR CLUTCH? OR TRANSMISSION?)
S8	85	S2 AND S3 AND S4 AND S5 AND S6 AND S7
S9	65	RD (unique items)
S10	41	S9 NOT PY>2000
S11	41	S10 NOT PD=20000628:20020628
S12	41	S11 NOT PD=20020628:20041022
File	8: Ei	Compendex(R) 1970-2004/Oct W3 (c) 2004 Elsevier Eng. Info. Inc.
File	35: Dissertation	Abs Online 1861-2004/Sep (c) 2004 ProQuest Info&Learning
File	202: Info. Sci. & Tech.	Abs. 1966-2004/Sep 09 (c) 2004 EBSCO Publishing
File	65: Inside	Conferences 1993-2004/Oct W4 (c) 2004 BLDSC all rts. reserv.
File	2: INSPEC	1969-2004/Oct W3 (c) 2004 Institution of Electrical Engineers
File	94: JICST-EPlus	1985-2004/Sep W4 (c) 2004 Japan Science and Tech Corp(JST)
File	111: TGG Natl.	Newspaper Index(SM) 1979-2004/Oct 25 (c) 2004 The Gale Group
File	233: Internet & Personal	Comp. Abs. 1981-2003/Sep (c) 2003 EBSCO Pub.
File	6: NTIS	1964-2004/Oct W2 (c) 2004 NTIS, Intl Cpyrght All Rights Res
File	144: Pascal	1973-2004/Oct W3 (c) 2004 INIST/CNRS
File	434: SciSearch(R)	Cited Ref Sci 1974-1989/Dec (c) 1998 Inst for Sci Info
File	34: SciSearch(R)	Cited Ref Sci 1990-2004/Oct W3 (c) 2004 Inst for Sci Info
File	62: SPIN(R)	1975-2004/Aug W4 (c) 2004 American Institute of Physics
File	99: Wilson Appl.	Sci & Tech Abs 1983-2004/Sep (c) 2004 The HW Wilson Co.

12/5/3 (Item 3 from file: 8)
DIALOG(R) File 8: Ei Compendex(R)
(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

04032360 E.I. No: EIP95012509007

Title: Learning **disjunctive concepts** with **distributed genetic algorithms**

Author: Giordana, A.; Saitta, L.; Zini, F.

Corporate Source: Universita di Torino, Torino, Italy

Conference Title: Proceedings of the 1st IEEE Conference on Evolutionary Computation. Part 1 (of 2)

Conference Location: Orlando, FL, USA Conference Date: 19940627-19940629

Sponsor: IEEE

E.I. Conference No.: 21509

Source: IEEE Conference on Evolutionary Computation - Proceedings v /1 1994. IEEE, Piscataway, NJ, USA, 94TH0650-2. p 115-119

Publication Year: 1994

CODEN: 001660

Language: English

Document Type: CA; (Conference Article) Treatment: A; (Applications); G ; (General Review); T; (Theoretical)

Journal Announcement: 9503W2

Abstract: Induction of concept descriptions from examples is a **machine learning task** that can be formulated as a search problem. The paper discusses the application of **genetic algorithms** as an alternative for searching concept description **spaces** due to their suitability to exploit massive parallelism. Results show that the **task of learning** multimodal concepts requires more sophisticated approaches than those required to **learn** a unimodal concept. It not only requires the use of the old **techniques** but also the design of new **evolution** strategies. It also investigates the possibility of developing a more theoretical approach, trying to describe an approximate **evolution** of the **population**. 13 Refs.

Descriptors: **Learning** systems; Optimization; Algorithms; Distributed computer systems; Function evaluation; Computational complexity; Mathematical models; Classification (of information); Mathematical operators

Identifiers: Disjunctive concepts; Distributed **genetic algorithms**

Classification Codes:

723.4 (Artificial Intelligence); 921.5 (Optimization Techniques); 722.4 (Digital Computers & Systems); 723.1 (Computer Programming); 721.1 (Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory)

723 (Computer Software); 921 (Applied Mathematics); 722 (Computer Hardware); 721 (Computer Circuits & Logic Elements)

72 (COMPUTERS & DATA PROCESSING); 92 (ENGINEERING MATHEMATICS)

12/5/5 (Item 1 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online
(c) 2004 ProQuest Info&Learning. All rts. reserv.

01803312 ORDER NO: AADAA-I9940706

**ON SYNCHRONIZED EVOLUTION OF THE NETWORK OF AUTOMATA (GENETIC
ALGORITHMS, SEQUENCE PREDICTION)**

Author: INAGAKI, YOSHIYUKI

Degree: PH.D.

Year: 1999

Corporate Source/Institution: UNIVERSITY OF CALIFORNIA, IRVINE (0030)

Chair: LOUIS NARENS

Source: VOLUME 60/08-B OF DISSERTATION ABSTRACTS INTERNATIONAL.

PAGE 4056. 112 PAGES

Descriptors: COMPUTER SCIENCE

Descriptor Codes: 0984

One of the **tasks** in **machine learning** is to build a device which guesses each next input symbol of a sequence as it takes one input symbol from the sequence. We studied new approaches to this **task**. We suggest that deterministic finite automata, *DFA*, are good building blocks for this device together with **genetic** algorithms, *GA*, which let these automata "evolve" to guess each next input symbol of the sequence. Moreover, we studied the way to combine these highly fit automata so that the network of them would compensate for each other's weakness and guess better than any single automaton can. We studied the simplest approaches to combine automata: building trees of automata with special purpose automata, which may be called *switch-boards*. These switch-board automata are located on the internal nodes of the tree, take an input symbol from the input sequence just like other automata do, and guess which subtree will make a right guess on each next input symbol. **Genetic** algorithms again play a crucial role in searching for switch-board automata. We studied various ways of growing trees of automata and tested them on sample input sequences, mainly note pitches, note duration, and up/down notes of Bach's Fugue. The test results show that DFAs together with GAs seem to be very effective for this type of pattern **learning task**. Besides this main finding, the tests revealed several interesting things. For example, the sequence of the note pitches is more predictable than the sequence of up/down notes. This is counterintuitive. Larger alphabets mean larger numbers of possible configurations of automata. This implies a larger search **space** for **genetic** algorithms; therefore, the algorithms should have difficulty finding automata which fit the **tasks**. However, the tree devices built to predict the note pitches often outperform those built to predict the up/down notes even though the size of the input alphabet for the former is 8 and that for the latter is 2. This suggests the following: The **genetic** search is so powerful and effective that if there are good solutions in its search **space**, it will find one when it works with a large enough **population** for a large enough number of generations. Therefore, if the search fails to find a good solution, the search **space** almost certainly does not contain one.

12/5/8 (Item 4 from file: 35)
DIALOG(R) File 35:Dissertation Abs Online
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01620149 ORDER NO: AAD98-15988

**ON THE STABILITY AND OPTIMALITY OF GENETIC ALGORITHM BASED CONTROLLERS
(INTELLIGENT CONTROL, MACHINE LEARNING)**

Author: MARRA, MICHAEL ANTHONY, III

Degree: PH.D.

Year: 1997

Corporate Source/Institution: UNIVERSITY OF KENTUCKY (0102)

Director: BRUCE L. WALCOTT

Source: VOLUME 58/11-B OF DISSERTATION ABSTRACTS INTERNATIONAL.

PAGE 6137. 167 PAGES

Descriptors: ENGINEERING, ELECTRONICS AND ELECTRICAL ; COMPUTER SCIENCE
; ARTIFICIAL INTELLIGENCE

Descriptor Codes: 0544; 0984; 0800

Genetic algorithms are stochastic search **techniques** that guide a **population** of solutions using the principles of **evolution** and natural **genetics**. In recent years, **genetic** algorithms have become a popular optimization tool for many areas of research, including the field of system **control** and **control** design. Optimizing **controls** with **genetic** algorithms usually requires a rigorous computer based model on which to perform simulations. In some cases such a model may not be available or easily obtainable. For this reason, there has been recent interest in applying **genetic** algorithm based **controllers** directly to target systems on-line instead of using off-line simulations.

This study is concerned with the use of **genetic** algorithms for adaptive **control** of unknown systems. In particular, a method for analysis of the proposed **genetic** algorithm **controller** with respect to the stability of the **control** system is targeted as the primary goal. Because of the stochastic nature in which a **genetic** algorithm searches its solution **space**, instability in the **genetic** algorithm **controller** is inherent in initial generations, and is also possible in steady state while the **genetic** algorithm continues **evolution** in order to remain adaptive. Therefore, an analysis of the **genetic** algorithm-based adaptive **control** system with respect to stability and a means to determine methods for minimizing instability in the **control** system are of utmost concern.

A method for analyzing the stability of the **genetic** algorithm **controller** is developed and presented. This method is based on Schema Theory on the premise that the stable **controllers** are defined by a set of schema. Simulations of the **genetic** algorithm **controller** applied to a laboratory system provide empirical data supporting the developed stability theory. The concept of optimality is then introduced with the rational that from a **genetic** algorithm sense, the desired behavior of the **controllers** should be measured with respect to the optimal or near-optimal values of the fitness function. The convergence of the **population** was examined with respect to the proportion of optimal **controllers**, and a new convergence model of the **genetic** algorithm **controller** is developed. Supporting simulations are again presented, and directions for further development of this research area are suggested.

12/5/9 (Item 5 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online
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01592699 ORDER NO: AAD97-29045

HIERARCHICAL LEARNING WITH PROCEDURAL ABSTRACTION MECHANISMS (GENETIC PROGRAMMING)

Author: ROSCA, JUSTINIAN

Degree: PH.D.

Year: 1997

Corporate Source/Institution: THE UNIVERSITY OF ROCHESTER (0188)

Supervisor: DANA BALLARD

Source: VOLUME 58/04-B OF DISSERTATION ABSTRACTS INTERNATIONAL.

PAGE 1981. 241 PAGES

Descriptors: COMPUTER SCIENCE ; STATISTICS ; MATHEMATICS

Descriptor Codes: 0984; 0463; 0405

Evolutionary computation (EC) consists of the design and analysis of probabilistic algorithms inspired by the principles of natural selection and variation. **Genetic** Programming (GP) is one subfield of EC that emphasizes desirable features such as the use of procedural representations, the capability to discover and exploit intrinsic **characteristics** of the application domain, and the flexibility to adapt the shape and complexity of **learned** models.

Approaches that **learn** monolithic representations are considerably less likely to be effective for complex problems, and standard GP is no exception. The main goal of this dissertation is to extend GP capabilities with automatic mechanisms to cope with problems of increasing complexity. Humans succeed here by skillfully using hierarchical decomposition and abstraction mechanisms. The translation of such mechanisms into a general computer implementation is a tremendous challenge, which requires a firm understanding of the interplay between representations and algorithms, and insights about how **machine learning** can enhance GP search.

This dissertation describes theoretical and experimental work to respond to the above challenge. It analyzes the **characteristics** of stochastic search for procedural representations, by focusing on the properties and biases of variable length expressions. Specifically, it describes experiments about "uniform" random sampling on the **space** of expressions, statistical properties of search, the dynamics of fitness distributions, and the variation of solution complexity during GP search. These experiments are used to develop a novel structural property called rooted tree-schema that formalizes the role of variable complexity of **learned** expressions.

This research also extends the capabilities of GP search with two new complementary approaches to **evolve** problem decompositions, called Adaptive Representation (AR) and **Evolutionary** -Divide-and-Conquer (EDC). AR extends GP with heuristic components that: (1) **learn** good subexpressions from problem solving traces; (2) abstract subexpressions into subroutines; (3) use subroutines to bias future search. **Evolved** solutions assume a modular and hierarchical organization. EDC takes the approach of extracting a "team" solution, instead of the ubiquitous GP approach that looks at the best-of- **population individual** . Its "symbiotic" representation and "coevolutionary" fitness evaluation drive the algorithm towards both specialized and cooperating solutions. The dissertation brings to life these approaches in several increasingly complex algorithms.

12/5/10 (Item 6 from file: 35)
DIALOG(R) File 35:Dissertation Abs Online
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01494452 ORDER NO: AADAA-IMM06551

A NEW APPROACH TO GENETIC -BASED AUTOMATIC FEATURE DISCOVERY

Author: VAN BELLE, TERRY (THEODORE) B.

Degree: M.S.

Year: 1995

Corporate Source/Institution: UNIVERSITY OF ALBERTA (CANADA) (0351)

Adviser: JONATHAN SCHAEFFER

Source: VOLUME 34/04 of MASTERS ABSTRACTS.

PAGE 1622. 88 PAGES

Descriptors: COMPUTER SCIENCE ; ARTIFICIAL INTELLIGENCE

Descriptor Codes: 0984; 0800

ISBN: 0-612-06551-0

Systems which take raw data and categorize them into discrete classes are ubiquitous in computer science, having applications in fields such as vision, expert systems, and game playing. These systems work by extracting features from the data and then combining the values of the features to form a judgement. While much work has been done on ways to automatically combine feature values, the **task** of automatic discovery of these features is recognized to be much more difficult, and so has become one of the holy grails of **machine learning**. Classifier systems, an outgrowth of **genetic** algorithms, seemed a promising approach to automatic feature discovery, but it is difficult to get the full power of the classifier system from existing implementations.

This thesis simplifies the classifier system into a variant of the **genetic** algorithm, called the **Population Genetic** Algorithm (PGA). PGAs are used to automatically discover features for tic-tac-toe and checkers endgame positions, and these features are automatically combined using Bayesian statistics to classify each position as won, lost, or drawn.

The theoretical **maximum** performance of the PGAs is determined by using an exhaustive enumeration **technique** to serve as a baseline comparison. The results indicate that while PGAs can be made to perform at near-optimal levels, the optimal solution is insufficient to perfectly classify any of the domains studied.

12/5/13 (Item 9 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online
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01261824 ORDER NO: AAD93-03240
EVOLVING **ARTIFICIAL INTELLIGENCE (ONTOGENY, EVOLUTION SIMULATION,**
MACHINE LEARNING , **STOCHASTIC SEARCH)**
Author: FOGEL, DAVID BRUCE
Degree: PH.D.
Year: 1992
Corporate Source/Institution: UNIVERSITY OF CALIFORNIA, SAN DIEGO (0033)
Chair: ANTHONY V. SEBALD
Source: VOLUME 53/09-B OF DISSERTATION ABSTRACTS INTERNATIONAL.
PAGE 4773. 575 PAGES
Descriptors: COMPUTER SCIENCE; ENGINEERING, SYSTEM SCIENCE; ARTIFICIAL
INTELLIGENCE
Descriptor Codes: 0984; 0790; 0800

The majority of research in artificial intelligence has been devoted to modeling the symptoms of intelligent behavior as we observe them in ourselves. Investigation into the causative factors of intelligence have been passed over in order to more rapidly obtain the immediate consequences of intelligence. The results of these efforts have been computer programs that achieve outstanding performance, but only in very **limited** domains of application.

It is suggested that attention be given to the mechanisms that generate intelligence. Intelligence may be defined as that property which enables a system to adapt its behavior to meet desired goals in a range of environments. Three organizational forms of intelligence are characterized within the present discussion: (1) phylogenetic (arising within the phyletic line of descent), (2) ontogenetic (arising within the **individual**), and (3) sociogenetic (arising within the **group**). It is argued that all three forms of intelligence are equivalent in process and that all intelligent systems are inherently **evolutionary** in nature.

Simulating natural **evolution** provides a method for machine generated intelligent behavior. A series of experiments is conducted to quantify the efficiency and effectiveness of **evolutionary** problem solving. The results indicate that this "**evolutionary** programming" can rapidly discover nearly optimum solutions to a broad range of problems. Mathematical analysis of the algorithm and its variations indicates that the process will converge to the global best available solution. Automatic **control** and gaming experiments are conducted in which an **evolutionary** program must discover suitable strategies for solving the **task** at hand. No credit assignment or other heuristic evaluations are offered to the **evolutionary** programs. The results indicate the utility of using simulated **evolution** for general problem solving.

12/5/16 (Item 2 from file: 2)

DIALOG(R) File 2:INSPEC

(c) 2004 Institution of Electrical Engineers. All rts. reserv.

5821940 INSPEC Abstract Number: A9805-8745-049, C9803-3385-010

Title: Rule-based controller for locomotion - use of radial basis function ANN

Author(s): Jonic, S.; Popovic, D.

Author Affiliation: Fac. of Electr. Eng., Belgrade Univ., Serbia

Conference Title: 4th Seminar on Neural Network Applications in Electrical Engineering. NEUREL 97 Proceedings p.49-52

Publisher: Univ. Belgrade, Belgrade, Yugoslavia

Publication Date: 1997 Country of Publication: Yugoslavia 226 pp.

Material Identity Number: XX97-01669

Conference Title: Proceedings 97. 4th Seminar on Neural Network Applications in Electrical Engineering

Conference Sponsor: IEEE Signal Process. Soc

Conference Date: 8-9 Sept. 1997 Conference Location: Belgrade, Yugoslavia

Language: English Document Type: Conference Paper (PA)

Treatment: Theoretical (T); Experimental (X)

Abstract: The combination of an entropy minimization type of inductive **learning technique** and a radial basis function type of artificial neural network was used to predict muscle activation patterns and sensory data based on the history of the sensory data. Those muscle activation patterns and sensory data were obtained from a simulation of walking assisted with a functional electrical stimulation system (FES). The discrete mathematical model consists of two linked segments with four muscles. Dynamic programming was used to determine optimal **control** having a cost function as the sum of the squares of the tracking errors from the desired trajectories, and the weighted sum of the squares of agonist and antagonist activations of the muscle **groups** acting around the hip and knee joints. The simulation takes into account the **individual biomechanical characteristics** of the subject using FES. We illustrate the **technique** by showing the activation of the equivalent flexor knee muscle, and the knee joint angle for seven consecutive strides. We show that predictions of the muscle activation patterns and sensory data are achievable. (19 Refs)

Subfile: A C

Descriptors: biocontrol; biomechanics; dynamic programming; feedforward neural nets; medical computing; **minimum** entropy methods; muscle; neurocontrollers; optimal **control** ; tracking

Identifiers: rule-based **controller** ; locomotion; radial basis function neural nets; entropy minimization; inductive **learning** ; muscle activation patterns; sensory data; walking; functional electrical stimulation; mathematical model; dynamic programming; optimal **control** ; **machine learning** ; tracking

Class Codes: A8745 (Biomechanics, biorheology, biological fluid dynamics); A8730E (External and internal data communications, nerve conduction and synaptic transmission); C3385 (Biological and medical control systems); C1340N (Neurocontrol); C1250 (Pattern recognition); C7330 (Biology and medical computing); C5290 (Neural computing techniques); C1330 (Optimal control); C1180 (Optimisation techniques)

Copyright 1998, IEE

Set	Items	Description
S1	120403	NEURAL() (NETWORK? OR NET OR NETS OR SYSTEM OR SYSTEMS) OR - NEUROMORPHIC? OR ANS OR (MACHINE OR COMPUTER) () {LEARN? OR TRA- IN?}
S2	5476233	INDIVIDUAL? OR CHROMOSOME? OR GENETIC? OR GENE OR GENES OR SPECIFIC() INSTANCE
S3	14555863	SELECTION() SPACE? OR GROUP? OR POOL OR POOLS OR POPULATION?
S4	15298712	CONTROL? OR TRAIN? OR LEARN? OR EVOLV? OR EVOLUTION? OR PA- RAEVOL? OR GENERATION
S5	11285251	SPACE? OR SUBSPACE? OR LIMIT? OR BOUNDAR? OR MAXIMUM? OR M- INIMUM?
S6	8758901	CHARACTERISTIC? OR PREFERENC? OR TECHNIQ? OR PERSONALIT? OR JOB OR JOBS OR TASK?
S7	9862	S1(5N) (MOTOR? OR MACHINE? OR DEVICE? OR ENGINE? OR AUOTOMO- BILE? OR APPARATUS OR POWER() TRAIN? OR CLUTCH? OR TRANSMISSIO- N?)
S8	13	S1(10N) S2(10N) S3(10N) S4(10N) S5(10N) S6
S9	76	S2(S) S3(S) S4(S) S7
S10	88	S8 OR S9
S11	66	RD (unique items)
S12	41	S11 NOT PY>2000
S13	41	S12 NOT PD=20000628:20020628
S14	41	S13 NOT PD=20020628:20041029
File	275:	Gale Group Computer DB(TM) 1983-2004/Oct 26 (c) 2004 The Gale Group
File	47:	Gale Group Magazine DB(TM) 1959-2004/Oct 26 (c) 2004 The Gale group
File	75:	TGG Management Contents(R) 86-2004/Oct W3 (c) 2004 The Gale Group
File	636:	Gale Group Newsletter DB(TM) 1987-2004/Oct 27 (c) 2004 The Gale Group
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File	624:	McGraw-Hill Publications 1985-2004/Oct 26 (c) 2004 McGraw-Hill Co. Inc
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File	141:	Readers Guide 1983-2004/Sep (c) 2004 The HW Wilson Co
File	239:	Mathsci 1940-2004/Dec (c) 2004 American Mathematical Society
File	370:	Science 1996-1999/Jul W3 (c) 1999 AAAS
File	696:	DIALOG Telecom. Newsletters 1995-2004/Oct 26 (c) 2004 The Dialog Corp.
File	553:	Wilson Bus. Abs. FullText 1982-2004/Sep (c) 2004 The HW Wilson Co
File	621:	Gale Group New Prod. Annou. (R) 1985-2004/Oct 26 (c) 2004 The Gale Group
File	674:	Computer News Fulltext 1989-2004/Sep W1 (c) 2004 IDG Communications
File	88:	Gale Group Business A.R.T.S. 1976-2004/Oct 22 (c) 2004 The Gale Group
File	369:	New Scientist 1994-2004/Oct W3 (c) 2004 Reed Business Information Ltd.
File	160:	Gale Group PROMT(R) 1972-1989 (c) 1999 The Gale Group
File	635:	Business Dateline(R) 1985-2004/Oct 26 (c) 2004 ProQuest Info&Learning
File	15:	ABI/Inform(R) 1971-2004/Oct 26 (c) 2004 ProQuest Info&Learning
File	9:	Business & Industry(R) Jul/1994-2004/Oct 25 (c) 2004 The Gale Group

File 13:BAMP 2004/Oct W3
 (c) 2004 The Gale Group
File 810:Business Wire 1986-1999/Feb 28
 (c) 1999 Business Wire
File 610:Business Wire 1999-2004/Oct 24
 (c) 2004 Business Wire.
File 647:CMP Computer Fulltext 1988-2004/Oct W3
 (c) 2004 CMP Media, LLC
File 98:General Sci Abs/Full-Text 1984-2004/Sep
 (c) 2004 The HW Wilson Co.
File 148:Gale Group Trade & Industry DB 1976-2004/Oct 15
 (c)2004 The Gale Group
File 634:San Jose Mercury Jun 1985-2004/Oct 24
 (c) 2004 San Jose Mercury News

14/3,K/1 (Item 1 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)
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01575362 SUPPLIER NUMBER: 14624581

Genetic algorithms. (Editorial)

Grefenstette, John J.

IEEE Expert, v8, n5, p5(4)

Oct, 1993

DOCUMENT TYPE: Editorial

ISSN: 0885-9000

LANGUAGE: ENGLISH

RECORD TYPE: ABSTRACT

ABSTRACT: **Genetic** algorithms are general-purpose search algorithms that use principles based on natural **population genetics** to solve problems. They maintain a **population** of knowledge structures representing candidate solutions to the current problem; the **population evolves** through competition (survival of the fittest) and **controlled** variation (recombination and mutation). **Genetic** algorithms use the knowledge collected during a search in a way that balances the need...

...the search space with the need to focus on high-performance regions of the space. **Genetic** algorithms can be applied to a range of optimization and **learning** problems, among which are routing and scheduling, machine vision, engineering design optimization, gas pipeline **control** systems, and **machine learning**; they are also used for **learning** the topology and weights of neural networks. How **genetic** algorithms maintain a **population** of knowledge structures, and their knowledge representation and operators are described.

14/3,K/16 (Item 1 from file: 239)
DIALOG(R)File 239:Mathsci
(c) 2004 American Mathematical Society. All rts. reserv.

02667087 MR 97d#68086

Problem structure heuristics and scaling behavior for genetic algorithms.

Frontiers in problem solving: phase transitions and complexity.

Clearwater, Scott H. (Xerox Palo Alto Research Center, Palo Alto, California, 94304)

Hogg, Tad (Xerox Palo Alto Research Center, Palo Alto, California, 94304)

Corporate Source Codes: 1-XEROX; 1-XEROX

Artificial Intelligence

Artificial Intelligence, 1996, 81, no. 1-2, 327--347. ISSN:

0004-3702 CODEN: AINTBB

Language: English Summary Language: English

Subfile: MR (Mathematical Reviews) AMS

Abstract Length: MEDIUM (18 lines)

Reviewer: Summary

...them, on average. We apply these observations as a heuristic to improve the performance of **genetic** algorithms for some constraint satisfaction problems. In particular, we use a simple cost measure to evaluate the likely solution difficulty of the different unsolved subproblems appearing in the **population**. This is used to determine which **individuals** contribute to subsequent generations and improves upon the traditional direct use of the underlying cost function. As a specific test case, we used the GENESIS **genetic** algorithm to search for the optimum of a class of random Walsh polynomials and identified the improvement due to this new heuristic. We describe how this improvement depends on the **population** size and accuracy of the underlying theory. Finally, we discuss extensions to other types of **machine learning** and problem solving systems."

\{For the entire collection see MR 97c:68008\}. ...

14/3,K/35 . (Item 1 from file: 9)
DIALOG(R)File 9:Business & Industry(R)
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1989048 Supplier Number: 01989048 (USE FORMAT 7 OR 9 FOR FULLTEXT)

Robots at work and play

(ABB Flexible Automation introduced a robotic palletizing system that can stack and unstack different-sized products fed from separate production lines)

Machine Design, v 69, n 21, p 23

November 06, 1997

DOCUMENT TYPE: Journal ISSN: 0024-9114 (United States)

LANGUAGE: English RECORD TYPE: Fulltext

WORD COUNT: 185

(USE FORMAT 7 OR 9 FOR FULLTEXT)

TEXT:

...load capacity (352 lb) over the New Berlin, Wis., producer's previous model.

Meanwhile, the **Evolved** Octopod, a product of England's University of Sussex, is able to walk along the shore by itself, using sensors, **motors**, and software. **Neural - net controllers** were downloaded to the tiny robot, only 50-cm long, letting it move on its own. The university's **Evolutionary Robotics Group** applies **genetic** algorithms to developing these **controllers** that are similar to, but simpler than, those in the human brain.

14/3,K/38 (Item 1 from file: 98)
DIALOG(R)File 98:General Sci Abs/Full-Text
(c) 2004 The HW Wilson Co. All rts. reserv.

04250995 H.W. WILSON RECORD NUMBER: BGSA00000995 (USE FORMAT 7 FOR
FULLTEXT)

Evolutionary computation: an overview.

Mitchell, Melanie

Taylor, Charles E

Annual Review of Ecology and Systematics v. 30 (1999) p. 593-616

SPECIAL FEATURES: bibl il ISSN: 0066-4162

LANGUAGE: English

COUNTRY OF PUBLICATION: United States

WORD COUNT: 11547

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

... programming also remains an area of active research (see, e.g.,
21).

The techniques called **genetic** algorithms (GAs) were first invented
by Holland in the 1960s (31). GAs are **population** -based algorithms in
which mutation and crossover are sources of random variation. GAs typically
worked...

...Holland's original proposal also included an "inversion" operator for
reordering of bits on a **chromosome**. In contrast with **evolution**
strategies and **evolutionary** programming, Holland's goal was not to design
algorithms to solve specific problems, but rather...

...be imported into computer systems. Several other people working in the
1950s and 1960s developed **evolution** -inspired algorithms for optimization
and **machine learning**; see (22, 26, 49) for discussions of this history.

In the last several years there...selection" (56), p. 474.

Moving from plateau to plateau of fitness is frequently observed in
evolutionary computation and is typically associated with changes in
complexity. Taking just one example, Miglino, Nafisi, & Taylor (48) used
genetic algorithms to **evolve controllers** for small robots. The
controllers were **neural networks** that could be described by equivalent
finite state automata, the complexity of which can be readily observed and
measured. The **task** presented was to traverse as many squares as possible
in a grid placed on the floor in a **limited** amount of time. Starting from
random networks it was initially sufficient merely to move forward and turn
left when encountering a corner. Many **neural networks** prescribed this
behavior, but some of these made it easier to make jumps to radically...
complex programs. There was much variation from run to run, with chance
largely determining which **populations** were able to find one improved
solution or another.

While these studies showed quite clearly...

Set	Items	Description
S1	20530	NEURAL() (NETWORK? OR NET OR NETS OR SYSTEM OR SYSTEMS) OR - NEUROMORPHIC? OR ANS OR (MACHINE OR COMPUTER) () (LEARN? OR TRA- IN?)
S2	556439	INDIVIDUAL? OR CHROMOSOME? OR GENETIC? OR GENE OR GENES OR SPECIFIC() INSTANCE
S3	697137	SELECTION() SPACE? OR GROUP? OR POOL OR POOLS OR POPULATION?
S4	1140509	CONTROL? OR TRAIN? OR LEARN? OR EVOLV? OR EVOLUTION? OR PA- RAEVOL? OR GENERATION
S5	1469390	SPACE? OR SUBSPACE? OR LIMIT? OR BOUNDAR? OR MAXIMUM? OR M- INIMUM?
S6	1017537	CHARACTERISTIC? OR PREFERENC? OR TECHNIQ? OR PERSONALIT? OR JOB OR JOBS OR TASK?
S7	2185	S1(5N) (MOTOR? OR MACHINE? OR DEVICE? OR ENGINE? OR AUOTOMO- BILE? OR APPARATUS OR POWER() TRAIN? OR CLUTCH? OR TRANSMISSIO- N?)
S8	76	S2(S)S3(S)S7
S9	31	S1(10N)S2(10N)S3(10N)S4(10N)S5
S10	22	S2(10N)S3(5N)S7
S11	32	(S9 OR S10) AND IC=(G06F? OR G06N?)
S12	32	IDPAT (sorted in duplicate/non-duplicate order)
S13	30	IDPAT (primary/non-duplicate records only)
File 348:EUROPEAN PATENTS 1978-2004/Oct W03		
(c) 2004 European Patent Office		
File 349:PCT FULLTEXT 1979-2002/UB=20041021,UT=20041014		
(c) 2004 WIPO/Univentio		

13/3,K/6 (Item 6 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
(c) 2004 European Patent Office. All rts. reserv.

01123615

Output control method and control system of a power source for a vehicle
Methode und Verfahren zur Steuerung einer Stromversorgungseinheit für ein
Kraftfahrzeug

Methode et système de commande d'une source d'énergie pour un véhicule

PATENT ASSIGNEE:

YAMAHA HATSUDOKI KABUSHIKI KAISHA, (299990), 2500 Shingai, Iwata-shi
Shizuoka-ken, (JP), (Applicant designated States: all)

INVENTOR:

Yamaguchi, Masashi, C/O Yamaha Hatsudoki K.K., 2500 Shingai, Iwata-Shi,
Shizuoka-ken, (JP)

Kamihira, Ichikai, C/O Yamaha Hatsudoki K.K., 2500 Shingai, Iwata-Shi,
Shizuoka-ken, (JP)

Takechi, Hiroaki, C/O Yamaha Hatsudoki K.K., 2500 Shingai, Iwata-Shi,
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LEGAL REPRESENTATIVE:

Grunecker, Kinkeldey, Stockmair & Schwanhauser Anwaltssozietät (100721)
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PATENT (CC, No, Kind, Date): EP 982484 A1 000301 (Basic)

APPLICATION (CC, No, Date): EP 99115679 990809;

PRIORITY (CC, No, Date): JP 98224864 980807

DESIGNATED STATES: DE; FR; GB; IT

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: F02D-011/10; F02D-041/14; F02D-041/24;

G06F-015/18 ; G05B-013/02

ABSTRACT WORD COUNT: 95

NOTE:

Figure number on first page: NONE

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200009	749
SPEC A	(English)	200009	7173
Total word count - document A			7922
Total word count - document B			0
Total word count - documents A + B			7922

...INTERNATIONAL PATENT CLASS: G06F-015/18

...SPECIFICATION random within the predetermined range (approximately between -10 and 10). At this time, if the **learning** layer has already completed **learning** and generated output, diversity of the **population** during **evolutional** processing can be maintained without any damage of performance even when the number of **individuals** is **limited**, by including one **individual** which can reduce the output of the **evolutional** adaptation layer to zero.

Secondly, the bonding load of the **neural network** of the **control** Module is fixed with the bonding load of one, for example, individual a(1), of...

13/3,K/7 (Item 7 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
(c) 2004 European Patent Office. All rts. reserv.

01106037

Evaluation method for a hereditary algorithm
Bewertungsverfahren eines Vererbungsalgorithmus
Methode d'evaluation d'un algorithme hereditaire
PATENT ASSIGNEE:

YAMAHA HATSUDOKI KABUSHIKI KAISHA, (299991), 2500 Shingai, Iwata-shi
Shizuoka-ken, 438, (JP), (Applicant designated States: all)

INVENTOR:

Hajime, Kita, 1-3-5 Miyamaetaira, Miyamae-ku, Kawasaki-shi, Kanagawa-ken,
(JP)

Takuaki, Shibata, c/o Yamaha Hatsudoki K.K., 2500 Shingai, Iwata-shi,
Shizuoka-ken, (JP)

Masashi, Yamaguchi, c/o Yamaha Hatsudoki K.K., 2500 Shingai, Iwata-shi,
Shizuoka-ken, (JP)

LEGAL REPRESENTATIVE:

Grunecker, Kinkeldey, Stockmair & Schwanhauser Anwaltssozietat (100721)
, Maximilianstrasse 58, 80538 Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 969385 A2 000105 (Basic)
EP 969385 A3 040804
EP 969385 A3 040804

APPLICATION (CC, No, Date): EP 99112586 990701;

PRIORITY (CC, No, Date): JP 98187181 980702

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G06F-015/18 ; G06N-003/12

ABSTRACT WORD COUNT: 26

NOTE:

Figure number on first page: 15

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200001	636
SPEC A	(English)	200001	6611
Total word count - document A			7247
Total word count - document B			0
Total word count - documents A + B			7247

INTERNATIONAL PATENT CLASS: G06F-015/18 ...

... G06N-003/12

...SPECIFICATION best fuel economy air-fuel ratio and the maximum output
air-fuel ratio.

Next, the **evolution** of a module with the hereditary algorithm will be
described. FIG. 11 is a flow...

...FIG. 12 is for explaining the process shown in FIG. 11. First, coupling
factors of **neural networks** constituting the fuel economy module are
coded as **genes** to generate a first generation of a plural number (nine
in this embodiment) of **individuals** a(j) (step 1). Here, it is possible
to keep the versatility of the **group** of **individuals** in the process of
evolution even if there is a **limit** in the number of individuals while
maintaining the pre-evolution performance by including in the **group** of
individuals one **individual** that can make the output of the evolution
adaptive layer zero.

Next, for one **individual** a(1) for example in one of the **individuals**
a(j) generated in the step 1, a **neural network** output x corresponding
to an actual input information (engine revolution and throttle opening)
is determined using the **neural network** of the fuel economy module
(step 2). The output is further converted linearly using the...

13/3,K/9 (Item 9 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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00446066

GENETIC SYNTHESIS OF NEURAL NETWORKS.
GENETISCHE SYNTHESE VON NEURONALEN NETZWERKEN.
SYNTHESE GENETIQUE DE RESEAUX NEURONAUX.

PATENT ASSIGNEE:

HONEYWELL INC., (246051), Honeywell Plaza, Minneapolis MN 55408, (US),
(applicant designated states: AT;BE;CH;DE;DK;ES;FR;GB;IT;LI;LU;NL;SE)

INVENTOR:

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HARP, Steven, A., 2245 Scudder, St. Paul, MN 55108, (US)
SAMAD, Tariq, 4949 Russell Avenue South, Minneapolis, MN 55410, (US)

LEGAL REPRESENTATIVE:

Fox-Male, Nicholas Vincent Humbert (57741), Honeywell Control Systems
Limited Charles Square, Bracknell Berkshire RG12 1EB, (GB)

PATENT (CC, No, Kind, Date): EP 465489 A1 920115 (Basic)
EP 465489 B1 941130
WO 9011568 901004

APPLICATION (CC, No, Date): EP 90904720 900221; WO 90US828 900221

PRIORITY (CC, No, Date): US 329623 890328

DESIGNATED STATES: AT; BE; CH; DE; DK; ES; FR; GB; IT; LI; LU; NL; SE

INTERNATIONAL PATENT CLASS: G06F-015/18 ; G06F-015/80

NOTE:

No A-document published by EPO

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	EPBBF1	800
CLAIMS B	(German)	EPBBF1	702
CLAIMS B	(French)	EPBBF1	869
SPEC B	(English)	EPBBF1	6129
Total word count - document A			0
Total word count - document B			8500
Total word count - documents A + B			8500

INTERNATIONAL PATENT CLASS: G06F-015/18 ...

... G06F-015/80

...SPECIFICATION in the statistics of the population and using that information to create new individuals. The **population** is cyclically renewed according to a reproductive plan. Each new "**generation**" of the **population** is created by first sampling the previous **generation** according to fitness; the method used for differential selection is known to be a near-optimal method of sampling the search **space**. Novel strings are created by altering selected **individuals** with **genetic** operators. Prominent among these is the crossover operator which synthesizes new strings by splicing together segments of two sampled **individuals**.

A main object of the invention is to provide a new method as referred to above for designing optimized artificial **neural networks**.

Other objects and advantages of the invention will become apparent from the following specification, appended...accommodated, for example.

Also, the scope of the network design method disclosed herein is not **limited** to the design of the network shown in Fig. 1.

Fig. 2 illustrates schematically how a **population** of blueprints 20 (i.e. bit string designs for different **neural networks**) are cyclically updated by a **genetic** algorithm based on their fitness. The fitness of a network is a combined measure of its worth on the problem, which may take into account **learning** speed, accuracy and cost factors such as the size and complexity of the networks.

The...

13/3,K/13 (Item 13 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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01050150

METHOD OF COMBINATORIAL MULTIMODAL OPTIMISATION
PROCEDE D'OPTIMISATION MULTIMODALE COMBINATOIRE

Patent Applicant/Assignee:

BRITISH TELECOMMUNICATIONS PUBLIC LIMITED COMPANY, 81 Newgate Street,
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designated states except: US)

Patent Applicant/Inventor:

HE Liwen, 1 Shelbourne Close, Ipswich, Suffolk IP5 2FP, GB, GB
(Residence), CN (Nationality), (Designated only for: US)

Legal Representative:

WILLIAMSON Simeon Paul (agent), BT Group Legal Intellectual Property
Department, Holborn Centre, 8TH Floor, 120 Holborn, London EC1N 2TE, GB

Patent and Priority Information (Country, Number, Date):

Patent: WO 200379288 A2-A3 20030925 (WO 0379288)
Application: WO 2003GB998 20030312 (PCT/WO GB0300998)
Priority Application: EP 2002251713 20020312

Designated States:

(Protection type is "patent" unless otherwise stated - for applications
prior to 2004)

CA US

(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PT SE SI
SK TR

Publication Language: English

Filing Language: English

Fulltext Word Count: 5199

Main International Patent Class: G06N-003/12

Fulltext Availability:

Detailed Description

Detailed Description

... class non-dominated

individuals searched so far are guaranteed to be preserved in the next
generation in order to maintain suitable genetic diversity and
accelerate convergence speed.

The number of non-dominated individuals is preferably fixed to a portion
of

population size, otherwise no **space** is available for new entries in
the

population. The size of non-dominated **individuals** is preferably set
as 20% of **population** size.

Once the reserved sub- **population** has been determined, the remaining 80%
is filled, as mentioned above, using roulette wheel selection: Goldberg,
D.E..

Genetic Algorithms in Search, Optimization, and **Machine Learning**,
Reading,

MA: Addison Wesley, 1989. In this selection, bias optimum is used as the
reproduction operator. The number of expected **individuals** is given by.

integer (FitnessValueofIndividual x **Population** size)

Y FitnessValueoffndividuals

Once the new **population** has been chosen, crossover and mutation is
applied to it.

The basic forms of crossover...

Set	Items	Description
S1	10590	NEURAL() (NETWORK? OR NET OR NETS OR SYSTEM?) OR NEUROMORPH- IC? OR ANS OR (MACHINE OR COMPUTER) () (LEARN? OR TRAIN?)
S2	419002	INDIVIDUAL? OR CHROMOSOME? OR GENETIC? OR GENE OR GENES OR SPECIFIC() INSTANCE
S3	953276	SELECTION() SPACE? OR GROUP? OR POOL OR POOLS OR POPULATION?
S4	4615792	CONTROL? OR TRAIN? OR LEARN? OR EVOLV? OR EVOLUTION? OR PA- RAEVOL? OR GENERATION
S5	2152480	SPACE? OR SUBSPACE? OR LIMIT? OR BOUNDAR? OR MAXIMUM? OR M- INIMUM?
S6	1024509	CHARACTERISTIC? OR PREFERENC? OR TECHNIQ? OR PERSONALIT? OR JOB OR JOBS OR TASK?
S7	1268	S1(5N) (MOTOR? OR MACHINE? OR DEVICE? OR ENGINE? OR AUTOMOB- ILE? OR POWER() (TRAIN? OR SOURCE?) OR CLUTCH? OR TRANSMISSION- ?)
S8	142	S7 AND (S2 OR S3)
S9	7	S8 AND MC=(T06-A05? OR V06-N? OR X13-G01?)
S10	1004	S7 AND (S4 OR S5)
S11	146	S10 AND S6
S12	20	S11 AND MC=(T06-A05? OR V06-N? OR X13-G01?)
S13	25	S12 OR S9
S14	19	S13 NOT AD=20000628:20020628
S15	18	S14 NOT AD=20020628:20041022
File 347:JAPIO Nov 1976-2004/Jun(Updated 041004)		
(c) 2004 JPO & JAPIO		
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200467		
(c) 2004 Thomson Derwent		

15/5/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

014928570 **Image available**
WPI Acc No: 2002-749279/200281
XRPX Acc No: N02-589993

Controller for switched reluctance motor , has multilayer neural network which is connected with fuzzy logic circuit, to generate control signals for energization of motor

Patent Assignee: EMERSON ELECTRIC CO (EMEL)

Inventor: YIFAN T

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6442535	B1	20020827	US 98181535	A	19981028	200281 B

Priority Applications (No Type Date): US 98181535 A 19981028

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 6442535	B1	18	G06N-007/02	

Abstract (Basic): US 6442535 B1

NOVELTY - A fuzzy logic circuit (50) receives an input signal representing the difference between a desired operating **characteristic** and an actual operating **characteristic** of a switched reluctance motor (12). A multilayer **neural network** (47) which receives the output of the fuzzy logic circuit, generates output **control** signals for **controlling** energization of the switched reluctance motor.

USE - For switched reluctance motors used in DSP, microprocessor.

ADVANTAGE - Achieves compact and intelligent **control** of a switched reluctance motor, enabling the construction of a low cost and high performance **controller**.

DESCRIPTION OF DRAWING(S) - The figure shows the functional block diagram of the **controller**.

Switched reluctance motor (12)

Neural network (47)

Fuzzy logic circuit (50)

pp; 18 DwgNo 4/9

Title Terms: **CONTROL** ; SWITCH; RELUCTANCE; MOTOR; MULTILAYER; NEURAL; NETWORK; CONNECT; FUZZ; LOGIC; CIRCUIT; GENERATE; **CONTROL** ; SIGNAL; ENERGISE; MOTOR

Derwent Class: T01; T06; U22

International Patent Class (Main): G06N-007/02

File Segment: EPI

15/5/4 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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013540498 **Image available**
WPI Acc No: 2001-024704/200103
XRPX Acc No: N01-019304

**Diagnostic system for closed cycle thermal regenerative machine , has
artificial neural network to associate internal parameter with
external parameter detected by sensor**

Patent Assignee: STIRLING TECHNOLOGY CO (STIR-N)
Inventor: PENSWICK L B
Number of Countries: 092 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200065413	A1	20001102	WO 2000US10843	A	20000419	200103 B
AU 200044819	A	20001110	AU 200044819	A	20000419	200109

Priority Applications (No Type Date): US 99299215 A 19990423..

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

WO 200065413 A1 E 30 G05B-013/02

Designated States (National): AE AG AL AM AT AZ BA BB BG BR BY CA CH CN
CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG
KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD
SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR
IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW

AU 200044819 A G05B-013/02 Based on patent WO 200065413

Abstract (Basic): WO 200065413 A1

NOVELTY - The diagnostic system has an artificial neural network (22) which associates internal parameters with the external parameter detected by a sensor (38). A diagnostic circuitry (27) receives the associated internal parameter from the artificial neural network and diagnoses operating condition of the thermal regenerative machine (10).

DETAILED DESCRIPTION - The sensor includes an accelerometer to detect motion, velocity, and acceleration of the machine. The artificial neural network (22) generates an output including an internal parameter indicative of an overstroke condition of the thermal regenerative machine. INDEPENDENT CLAIMS are also included for the following:

(a) method of monitoring operating characteristics of closed cycle thermal regenerative machine;

(b) control system

USE - Used for controlling and evaluating operation of closed cycle free piston machines such as Stirling cycle machines, in power generation energy conversion and cooler industry.

ADVANTAGE - Facilitates to correlate measurable external parameters to internal parameters for a closed cycle thermal regenerative machine, thereby durability determination accuracy is improved. Offers simple and accurate control system for regulating operating performance of the machine.

DESCRIPTION OF DRAWING(S) - The figure shows the side view and simplified schematic diagram of a Stirling generator with an artificial neural network control system.

Thermal regenerative machine (10)

Artificial neural network (22)

Diagnostic circuitry (27)

Sensor (38)

pp; 30 DwgNo 1/6

Title Terms: DIAGNOSE; SYSTEM; CLOSE; CYCLE; THERMAL; REGENERATE; MACHINE;
ARTIFICIAL; NEURAL; NETWORK; ASSOCIATE; INTERNAL; PARAMETER; EXTERNAL;
PARAMETER; DETECT; SENSE

Derwent Class: T01; T06

International Patent Class (Main): G05B-013/02

File Segment: EPI

15/5/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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013329783 **Image available**
WPI Acc No: 2000-501722/200045
XRPX Acc No: N00-371988

Learning procedure of neural network for characteristic analysis
of machine tool, involves computing mean values of input data and
output data between two adjacent teacher data

Patent Assignee: TOSHIBA MACHINE CO LTD (TOSI)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 2000181894	A	20000630	JP 98352863	A	19981211	200045 B

Priority Applications (No Type Date): JP 98352863 A 19981211

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
JP 2000181894	A	5	G06F-015/18	

JP 2000181894 A 5 G06F-015/18

Abstract (Basic): JP 2000181894 A

NOVELTY - The teacher data comprised by the combination of
performance values of input and output data are prepared. A
characteristic value of network is determined based on a **learning**
method. The mean values of the input data and output data between two
adjacent teacher data are computed. The input data and output data are
combined to produce interpolation data.

DETAILED DESCRIPTION - The input data of the interpolation data are
given to a neural network where **characteristic** value was determined
previously, to compute the output data. The computed output data and
the output data of the interpolation data are compared. When the
difference of the compared output data is more than an allowance, the
interpolation data are added to the teacher data. The interpolation
data not settled in the predetermined condition are preserved. The
processes are repeated until the preserved interpolation data are
eliminated. The **characteristic** value determined at the end is adopted
as the **characteristic** value of a neural network.

USE - For **characteristic** analysis of machine tool.

ADVANTAGE - Solves problem on which abnormal output appears to
input equivalent to mean value of input data used as teacher data, when
using neural network with many neuro.

DESCRIPTION OF DRAWING(S) - The figure shows the flow of **learning**
of a neural network.

pp; 5 DwgNo 1/4

Title Terms: **LEARNING** ; PROCEDURE; NEURAL; NETWORK; **CHARACTERISTIC** ;
ANALYSE; MACHINE; TOOL; COMPUTATION; MEAN; VALUE; INPUT; DATA; OUTPUT;
DATA; TWO; ADJACENT; TEACH; DATA

Derwent Class: T01; T06

International Patent Class (Main): G06F-015/18.

File Segment: EPI

15/5/6 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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013167247 **Image available**
WPI Acc No: 2000-339120/200029
Related WPI Acc No: 2000-339944
XRPX Acc No: N00-254618

**Artificial intelligence developing machine has confidence accumulator
which receives action signals and accumulates confidence of signals based
on priority to determine most probable action signals**

Patent Assignee: UNIV MICHIGAN STATE (UNMS)

Inventor: WENG J

Number of Countries: 084 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200020932	A1	20000413	WO 99US23295	A	19991006	200029 B
AU 200011034	A	20000426	AU 200011034	A	19991006	200036

Priority Applications (No Type Date): US 98167751 A 19981007

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

WO 200020932 A1 E 54 G05B-013/00

Designated States (National): AL AM AT AU AZ BA BB BG BR BY CA CH CN CU
CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC
LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL
TJ TM TR TT UA UG UZ VN YU ZW

Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR
IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW

AU 200011034 A G05B-013/00 Based on patent WO 200020932

Abstract (Basic): WO 200020932 A1

NOVELTY - Effectors (16) are provided in the environment to act on one or more objects. A sensor-dedicated level builder with building elements receives input successive frames of sensed signals, and generates action signals with relative probability. A confidence accumulator receives action signals and accumulates confidence of the signals based on priority to determine most probable action signals.

DETAILED DESCRIPTION - Action **control** signals are produced to **control** the effectors and the **machine learns** directly from continuous unsegmented sensory streams on-line and **learns** new **tasks** of unconstrained domains without need for reprogramming. An INDEPENDENT CLAIM is also included for automatic **learning** capability developing method.

USE - For developing artificial intelligence.

ADVANTAGE - Enables developmental **learning** from its environment without requiring **task**-specific programming. Any sensors and effectors can be used for the machine, and potentially any cognitive and behavioral capability can be **learned**. Enables to **learn** directly from the sensory input streams without requiring humans to segment input streams by continuously interacting with the environment. Automatically builds up multiple level representations using a generalized Markov random process model.

DESCRIPTION OF DRAWING(S) - The figure shows block diagram of developmental **learning** machine.

Effectors (16)

pp; 54 DwgNo 2/16

Title Terms: ARTIFICIAL; INTELLIGENCE; DEVELOP; MACHINE; CONFIDE;

ACCUMULATOR; RECEIVE; ACTION; SIGNAL; ACCUMULATE; CONFIDE; SIGNAL; BASED;

PRIORITY; DETERMINE; PROBABILITY; ACTION; SIGNAL

Derwent Class: T01; T06; X25

International Patent Class (Main): G05B-013/00

International Patent Class (Additional): G06N-003/00

File Segment: EPI

15/5/8 (Item 8 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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012304495 **Image available**
WPI Acc No: 1999-110601/199910
XRPX Acc No: N99-080473

Engine characteristic control system using neural network -
includes control module that computes correction value of control
parameter based on characteristic of target and optimum control
module

Patent Assignee: YAMAHA MOTOR CO LTD (YMHA)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 10333705	A	19981218	JP 97145563	A	19970603	199910 B

Priority Applications (No Type Date): JP 97145563 A 19970603

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
JP 10333705	A	21	G05B-013/02	

Abstract (Basic): JP 10333705 A

NOVELTY - A control module computes correction value of a
control parameter, based on the characteristic of the target. The
control parameter is evolved autonomously for controlled input to
an evolution adaptive module. The learning of an optimum control
module is performed subsequently.

USE - For controlling characteristic of engine in car and other
domestic appliances.

ADVANTAGE - Learning and evolution is effectively performed by
hierarchization of learning process and evolution process.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of
control system.

Dwg.4/21

Title Terms: ENGINE; CHARACTERISTIC ; CONTROL ; SYSTEM; NEURAL; NETWORK;
CONTROL ; MODULE; COMPUTATION; CORRECT; VALUE; CONTROL ; PARAMETER;
BASED; CHARACTERISTIC ; TARGET; OPTIMUM; CONTROL ; MODULE

Derwent Class: Q52; T01; T06; X22

International Patent Class (Main): G05B-013/02

International Patent Class (Additional): F02D-029/02; F02D-041/04;

F02D-041/34; F02D-045/00; G06F-015/18

File Segment: EPI; EngPI

15/5/17 (Item 17 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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009360823 **Image available**
WPI Acc No: 1993-054301/199307
XRPX Acc No: N93-041437

Control **method for motor of domestic appliance e.g. vacuum cleaner -**
uses single sensor with characteristic sampling unit, neural network
and fuzzy logic to derive motor control characteristics
Patent Assignee: HITACHI LTD (HITA); HITACHI SEISAKUSHO KK (HITA)
Inventor: ISHII Y; KOHARAGI H; TAHARA K; AZIMA T; KAWAMATA M; SUKA H; THARA
K

Number of Countries: 006 Number of Patents: 012

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 527567	A2	19930217	EP 92306772	A	19920723	199307 B
JP 5056898	A	19930309	JP 91219603	A	19910830	199315
TW 212231	A	19930901	TW 92105675	A	19920717	199348
CN 1069133	A	19930217	CN 92109057	A	19920731	199351
EP 527567	A3	19950215	EP 92306772	A	19920723	199540
EP 527567	B1	19971001	EP 92306772	A	19920723	199744
DE 69222494	E	19971106	DE 622494	A	19920723	199750
			EP 92306772	A	19920723	
JP 10146304	A	19980602	JP 91192868	A	19910801	199832
			JP 97359177	A	19910801	
JP 10248777	A	19980922	JP 91219603	A	19910830	199848
			JP 98114586	A	19910830	
JP 3097641	B2	20001010	JP 91192868	A	19910801	200052
			JP 97359177	A	19910801	
KR 261622	B1	20000715	KR 9213732	A	19920731	200131
JP 3257507	B2	20020218	JP 91219603	A	19910830	200215
			JP 98114586	A	19910830	

Priority Applications (No Type Date): JP 91219603 A 19910830; JP 91192868 A
19910801; JP 97359177 A 19910801; JP 98114586 A 19910830

Cited Patents: No-SR.Pub; 3.Jnl.Ref; EP 312111; JP 2260002; JP 2292602; JP
4170927; US 4654924; EP 264728; EP 397205; JP 2260002; JP 2292602; JP
4170927; US 4966188

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 527567	A2	E	57	G05B-013/02	
				Designated States (Regional):	DE GB
JP 5056898	A		9	A47L-009/28	
TW 212231	A			G05B-011/00	
CN 1069133	A			G05B-015/00	
EP 527567	A3			G05B-013/02	
EP 527567	B1	E	59	G05B-013/02	
				Designated States (Regional):	DE GB
DE 69222494	E			G05B-013/02	Based on patent EP 527567
JP 10146304	A		11	A47L-009/28	Div ex application JP 91192868
JP 10248777	A		15	A47L-009/28	Div ex application JP 91219603
JP 3097641	B2		11	A47L-009/28	Div ex application JP 91192868
					Previous Publ. patent JP 10146304
KR 261622	B1			G05B-011/00	
JP 3257507	B2		14	A47L-009/28	Div ex application JP 91219603
					Previous Publ. patent JP 10248777

Abstract (Basic): EP 527567 A

In order to **control** a unit (1) such as a vacuum cleaner or washing machine, signals are derived from a single sensor (4), which measures a single property, e.g. air pressure, and the signals are used by a **characteristic** amount sampling unit (8) to derive a number of **control characteristics**. These are processed by a neural network to derive a basic **control** signal for a motor.

The **characteristics**, or further **characteristics** derived from a further sensor and a local condition detector are analysed by a fuzzy logic system and used to modify the basic **control** signal.

ADVANTAGE - Automatically adjusts motor speed to suit floor
condition or wash state.

Dwg.1/37

Title Terms: **CONTROL** ; METHOD; MOTOR; DOMESTIC; APPLIANCE; VACUUM; CLEAN;
SINGLE; SENSE; **CHARACTERISTIC** ; SAMPLE; UNIT; NEURAL; NETWORK; FUZZ;
LOGIC; DERIVATIVE; MOTOR; **CONTROL** ; **CHARACTERISTIC**

Index Terms/Additional Words: **WASHING** **MACHINE**Control method for
motor of ; MACHINE

Derwent Class: P28; T01; T06; V06; X27

International Patent Class (Main): A47L-009/28; G05B-011/00; G05B-013/02;
G05B-015/00

International Patent Class (Additional): A47L-009/00; A47L-009/19;
D06F-033/00; D06F-033/02; G05B-015/02; G05B-019/00; G06F-015/00;
G06F-015/52

File Segment: EPI; EngPI

Set	Items	Description
S1	2512	AU=(KISHI T? OR KISHI, T?)
S2	5	S1 AND IC=G06N?
S3	4	S1 AND (GENETIC()ALGORITHM? OR EVOLUTIONARY()COMPUT? OR (C- OMPUTER? OR MACHINE) (N) (LEARN? OR TRAIN?) OR ANN OR NEURAL?)
S4	8	S2 OR S3
S5	8	IDPAT (sorted in duplicate/non-duplicate order)
S6	5	IDPAT (primary/non-duplicate records only)

File 347:JAPIO Nov 1976-2004/Jun(Updated 041004)
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File 348:EUROPEAN PATENTS 1978-2004/Oct W03
(c) 2004 European Patent Office

File 349:PCT FULLTEXT 1979-2002/UB=20041021,UT=20041014
(c) 2004 WIPO/Univentio

File 350:Derwent WPIX 1963-2004/UD,UM &UP=200466
(c) 2004 Thomson Derwent

6/5/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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014352366 **Image available**
WPI Acc No: 2002-173067/200223
XRPX Acc No: N02-131495

Performance control method of motor, involves setting search area in selection space in accordance with scores of chromosomes based on predetermined rules to select genes for generation of chromosomes
Patent Assignee: YAMAHA HATSUDOKI KK (YMHA); YAMAHA MOTOR CO LTD (YMHA)
; KISHI T (KISH-I)

Inventor: **KISHI T**
Number of Countries: 028 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 1168116	A1	20020102	EP 2001115842	A	20010628	200223 B
US 20020013776	A1	20020131	US 2001873510	A	20010604	200223
JP 2002109507	A	20020412	JP 2001194839	A	20010627	200241
EP 1168116	B1	20030521	EP 2001115842	A	20010628	200341
DE 60100285	E	20030626	DE 600285	A	20010628	200350
			EP 2001115842	A	20010628	

Priority Applications (No Type Date): JP 2000195194 A 20000628

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 1168116	A1	E	43	G05B-013/02	
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR					
US 20020013776	A1			G06N-003/08	
JP 2002109507	A		22	G06N-003/00	
EP 1168116	B1	E		G05B-013/02	
Designated States (Regional): DE FR GB IT					
DE 60100285	E			G05B-013/02	Based on patent EP 1168116

Abstract (Basic): EP 1168116 A1

NOVELTY - The adapted chromosomes are selected and scored by evaluating each chromosome based on signals indicative of performance of the motor activated using generation of chromosomes. A search area is set in a selection space in accordance with the scores based on predetermined rules, for selecting genes for the subsequent generation of chromosomes and desired motor performance is achieved.

USE - For controlling the performance of motor with control module optimized by **evolutionary computing**.

ADVANTAGE - Improves the efficiency of the motor. Reduces user's task and eases the user's operation.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic diagram of performance control device for motor.

pp; 43 DwgNo 1/24

Title Terms: PERFORMANCE; CONTROL; METHOD; MOTOR; SET; SEARCH; AREA; SELECT
; SPACE; ACCORD; SCORE; CHROMOSOME; BASED; PREDETERMINED; RULE; SELECT;
GENE; GENERATE; CHROMOSOME

Derwent Class: Q52; T06; V06; X13

International Patent Class (Main): G05B-013/02; **G06N-003/00** ; **G06N-003/08**

International Patent Class (Additional): F02D-045/00

File Segment: EPI; EngPI

6/5/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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013808314

WPI Acc No: 2001-292526/200131

XRPX Acc No: N01-209093

**Method of optimizing the control of a device on-line by evolving the
control parameters in successive steps so as to reflect actual
evaluations of the results of the evolution**

Patent Assignee: YAMAHA HATSUDOKI KK (YMHA); YAMAHA MOTOR CO LTD (YMHA)

Inventor: KAMIHIRA I; KISHI T

Number of Countries: 027 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 1056042	A2	20001129	EP 2000111491	A	20000529	200131 B
JP 2000339005	A	20001208	JP 99150541	A	19990528	200131
US 6687554	B1	20040203	US 2000579799	A	20000526	200413

Priority Applications (No Type Date): JP 99150541 A 19990528

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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EP 1056042	A2	E	25	G06N-003/12	
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Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT

LI LT LU LV MC MK NL PT RO SE SI

JP 2000339005	A		14	G05B-013/02	
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US 6687554	B1			G05B-013/02	
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Abstract (Basic): EP 1056042 A2

NOVELTY - One embodiment involves the control by wire of an internal combustion engine throttle in which the control system evolves the control parameters by selecting from each generation of parameters parents for the next generation. The parents are selected such that user evaluations of the result remain favorable.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for an optimization control device.

USE - In computer implemented control systems.

ADVANTAGE - Evolves the control system in ways which improve its user response.

pp; 25 DwgNo 0/15

Title Terms: METHOD; OPTIMUM; CONTROL; DEVICE; LINE; EVOLVE; CONTROL;
PARAMETER; SUCCESSION; STEP; SO; REFLECT; ACTUAL; EVALUATE; RESULT;
EVOLVE

Derwent Class: Q52; T01; T06; X22

International Patent Class (Main): G05B-013/02; G06N-003/12

International Patent Class (Additional): F02D-011/10; F02D-041/02;

F02D-045/00; G05D-003/10; G06F-015/18

File Segment: EPI; EngPI

6/5/3 (Item 3 from file: 347)
DIALOG(R)File 347:JAPIO
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07146922 **Image available**
EVOLUTION EFFICIENCY METHOD IN OPTIMIZING METHOD USING EVOLUTIONARY
CALCULATION

PUB. NO.: 2002-015301 [JP 2002015301 A]
PUBLISHED: January 18, 2002 (20020118)
INVENTOR(s): KISHI TOMOAKI
APPLICANT(s): YAMAHA MOTOR CO LTD
APPL. NO.: 2000-195160 [JP 2000195160]
FILED: June 28, 2000 (20000628)
INTL CLASS: G06N-003/00 ; F02D-045/00

ABSTRACT

PROBLEM TO BE SOLVED: To provide an evolution efficiency method in evolutionary calculation capable of efficiently advancing evolution by limiting the positions of individuals on a solution space when generating the individuals of the next generation.

SOLUTION: In this evolution efficiency method in the optimizing method using evolutionary calculation, one generation is formed with an individual group constituted of a plurality of individuals, an operation for generating the individual group of the next generation by using at least the individuals of the present generation for calculation is repeated, thus obtaining the individuals having high adaptability. The distance on the solution space between optional individuals is calculated, and the positions on the solution space of the individual group of the next generation are limited based on the inter-individual distance information.

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Set	Items	Description
S1	10590	NEURAL() (NETWORK? OR NET OR NETS OR SYSTEM?) OR NEUROMORPH- IC? OR ANS OR (MACHINE OR COMPUTER) () (LEARN? OR TRAIN?)
S2	419002	INDIVIDUAL? OR CHROMOSOME? OR GENETIC? OR GENE OR GENES OR SPECIFIC() INSTANCE
S3	953276	SELECTION() SPACE? OR GROUP? OR POOL OR POOLS OR POPULATION?
S4	4615792	CONTROL? OR TRAIN? OR LEARN? OR EVOLV? OR EVOLUTION? OR PA- RAEVOL? OR GENERATION
S5	2152480	SPACE? OR SUBSPACE? OR LIMIT? OR BOUNDAR? OR MAXIMUM? OR M- INIMUM?
S6	8140307	CHARACTERISTIC? OR PREFERENC? OR TECHNIQ? OR PERSONALIT? OR USE OR APPLICATION? OR JOB OR JOBS OR TASK?
S7	1417	S1(5N) (MOTOR? OR MACHINE? OR DEVICE? OR ENGINE? OR AUOTOMO- BILE? OR APPARATUS OR POWER() TRAIN? OR CLUTCH? OR TRANSMISSIO- N?)
S8	75	S2 AND S7
S9	61	S8 AND S6
S10	26	S8 AND (OPTIMI? OR IMPROV? OR EFFICIENC? OR MODIF? OR DYNA- MIC?)
S11	45	(S9 OR S10) AND S4
S12	10	(S9 OR S10) AND S5
S13	56	S10 OR S11 OR S12
S14	37	S13 AND IC=(G06F? OR G06N?)
S15	37	IDPAT (sorted in duplicate/non-duplicate order)
S16	37	IDPAT (primary/non-duplicate records only)

File 347: JAPIO Nov 1976-2004/Jun(Updated 041004)

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File 350: Derwent WPIX 1963-2004/UD, UM & UP=200467

(c) 2004 Thomson Derwent

16/5/22 (Item 22 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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010552983 **Image available**
WPI Acc No: 1996-049936/199605
XRPX Acc No: N96-041786

Resource distributor for use in physical network - subdivides physical link capacities into logical links using algorithm and two neural networks to compute logical link capacities so that network operation is optimised according to objective function

Patent Assignee: TELEFONAKTIEBOLAGET ERICSSON L M (TELF); ELLEMTEL
UTVECKLING AB (TELF)

Inventor: BIRO J; BLAABJERG S; BODA M; FARAGO A; SZECSY T; TRON T; VASS J;
BR J; FARAG A; TRN T; BIRO J V

Number of Countries: 023 Number of Patents: 012

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 9534979	A2	19951221	WO 95SE559	A	19950517	199605 B
SE 9500838	A	19951214	SE 95838	A	19950308	199610
AU 9527560	A	19960105	AU 9527560	A	19950517	199614
WO 9534979	A3	19960208	WO 95SE559	A	19950517	199622
NO 9605275	A	19970211	WO 95SE559	A	19950517	199717
			NO 965275	A	19961210	
FI 9604982	A	19970210	WO 95SE559	A	19950517	199719
			FI 964982	A	19961212	
EP 776561	A1	19970604	EP 95922810	A	19950517	199727
			WO 95SE559	A	19950517	
US 5687292	A	19971111	US 95456685	A	19950601	199751
JP 10501666	W	19980210	WO 95SE559	A	19950517	199816
			JP 96502001	A	19950517	
AU 688522	B	19980312	AU 9527560	A	19950517	199822
KR 97704285	A	19970809	WO 95SE559	A	19950517	199836
			KR 96707173	A	19961213	
KR 303178	B	20011122	WO 95SE559	A	19950517	200244
			KR 96707173	A	19961213	

Priority Applications (No Type Date): SE 95838 A 19950308; SE 942060 A
19940613

Cited Patents: 4.Jnl.Ref; No-SR.Pub

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9534979	A2	E	50	H04M-000/00	
				Designated States (National): AU CA FI JP KR NO	
				Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LU MC NL	
				PT SE	
SE 9500838	A			H04L-012/56	
AU 9527560	A			H04L-029/06	Based on patent WO 9534979
WO 9534979	A3			H04M-000/00	
NO 9605275	A			H04M-000/00	
FI 9604982	A			H04L-000/00	
EP 776561	A1	E	1	H04L-012/56	Based on patent WO 9534979
				Designated States (Regional): CH DE DK ES FR GB IT	
US 5687292	A		24	H04Q-003/00	
JP 10501666	W		58	H04L-012/28	Based on patent WO 9534979
AU 688522	B			H04L-029/06	Previous Publ. patent AU 9527560
					Based on patent WO 9534979
KR 97704285	A			H04M-001/00	Based on patent WO 9534979
KR 303178	B			H04L-012/28	Previous Publ. patent KR 97704285
					Based on patent WO 9534979

Abstract (Basic): WO 9534979 A

The device distributes resources of a given physical network among logical links. The **device** includes a **neural network** in which one part of the algorithm is implemented. A second neural network is used to implement a second part of the algorithm. The two neural networks interwork to compute logical link capacities.

Pref., the algorithm receives parameters describing the physical

network, the topology of the logical links and traffic demands. A **control** unit **controls** the interworking of the two neural networks. At least one signal transformation unit transforms signals between the neural networks. The computed logical link capacities, given an objective function, essentially **optimise** the operation of the physical network according to the objective function.

ADVANTAGE - Provides network manager with opportunity of running real-time **applications** of complex reconfiguration algorithms to enhance network flexibility and operational safety. Distributes resources of given network among logical links by subdividing physical link capacities using algorithm.

Dwg.1/9

Title Terms: RESOURCE; DISTRIBUTE; PHYSICAL; NETWORK; SUBDIVIDED; PHYSICAL; LINK; CAPACITY; LOGIC; LINK; ALGORITHM; TWO; NEURAL; NETWORK; COMPUTATION ; LOGIC; LINK; CAPACITY; SO; NETWORK; OPERATE; OPTIMUM; ACCORD; OBJECTIVE ; FUNCTION

Derwent Class: T01; W01

International Patent Class (Main): H04L-000/00; H04L-012/28; H04L-012/56; H04L-029/06; H04M-000/00; H04M-001/00; H04Q-003/00

International Patent Class (Additional): **G06F-015/18** ; H04Q-003/66

File Segment: EPI

16/5/24 (Item 24 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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009642856 **Image available**
WPI Acc No: 1993-336405/199342
XRPX Acc No: N93-260082

Layered neural network for solving optimisation problems - calculates similarity between input data and synaptic weight and given evaluation function value and selects most appropriate group accordingly

Patent Assignee: OLYMPUS OPTICAL CO LTD (OLYU)

Inventor: YOSHIHARA T

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5253327	A	19931012	US 91756467	A	19910909	199342 B

Priority Applications (No Type Date): JP 90257106 A 19900928

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 5253327	A	9	G06F-015/18	

Abstract (Basic): US 5253327 A

An **optimization apparatus** using a layered **neural network** has an input layer formed of input units and supplied with input data. An output layer formed of output units connected to the **individual** input units with specified synaptic weights, comprises a calculator circuit for calculating, for each output unit, the degree of similarity between the input data and the synaptic weight as well as the evaluation function value by causing the **optimization** problem to correspond to the fired units in the output layer.

The best matching optimum output unit is detected on the basis of the output of the calculator circuit, and a self-organization circuit changes the synaptic weights of a group of the output units associated with the optimum unit detected by the detector.

USE/ADVANTAGE - Solving **optimisation** problems, eg travelling salesman and n-queen problem. **Optimising** LSI module arrangement, restoration, edge extraction, binary image processing, graph theory. Fast, accurate.

Dwg.2/4

Title Terms: LAYER; NEURAL; NETWORK; SOLVING; OPTIMUM; PROBLEM; CALCULATE; SIMILAR; INPUT; DATA; SYNAPTIC; WEIGHT; EVALUATE; FUNCTION; VALUE; SELECT ; APPROPRIATE; GROUP; ACCORD

Derwent Class: T01

International Patent Class (Main): G06F-015/18

International Patent Class (Additional): G06F-015/16

File Segment: EPI

16/5/25 (Item 25 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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009628375 **Image available**
WPI Acc No: 1993-321924/199341
XRPX Acc No: N93-248057

Signal processor for evaluating test data e.g. in nuclear reactor testing
- uses neural network with interconnection weighting factor correction

Patent Assignee: GENSHI NENRYO KOGYO KK (GNSH)

Inventor: AOKI K; KOMATSU H; MATSUMOTO Y

Number of Countries: 003 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 4310279	A1	19931007	DE 4310279	A	19930330	199341 B
FR 2689273	A1	19931001	FR 933752	A	19930331	199348
JP 5281199	A	19931029	JP 92103914	A	19920331	199348

Priority Applications (No Type Date): JP 92103914 A 19920331

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 4310279	A1		8	G01D-001/00	
FR 2689273	A1			G06F-015/80	
JP 5281199	A			G01N-027/90	

Abstract (Basic): DE 4310279 A

An input device receives a measurement signal from a test device and an evaluation device analyses it to detect the occurrence of a fault in and/or a deposit on the tested object. The evaluation device contains a **neural network** signal processor with a number of processing units, each with a defined input/output **characteristic**, and a number of connecting devices with **individual** transfer **characteristics**

These interconnect the units with defined weighting factors. The processing device has a **learning** function for correcting the weighting factors to **optimise** the unit output signals.

USE /ADVANTAGE - For non-destructive test, e.g. in nuclear reactor steam generator. Automatic data evaluation is achieved as well as increased evaluation accuracy and **efficiency**.

Dwg.1/3

Title Terms: SIGNAL; PROCESSOR; EVALUATE; TEST; DATA; NUCLEAR; REACTOR;
TEST; NEURAL; NETWORK; INTERCONNECT; WEIGHT; FACTOR; CORRECT

Derwent Class: S02; T01; X14

International Patent Class (Main): G01D-001/00; G01N-027/90; **G06F-015/80**

International Patent Class (Additional): G01M-019/00; **G06F-009/44** ;

G06F-015/18 ; G21C-017/003; G21C-017/017; G21D-005/12

File Segment: EPI

16/5/32 (Item 32 from file: 347)
DIALOG(R)File 347:JAPIO
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04623252 **Image available**
TRAINING DEVICE FOR COMPUTER

PUB. NO.: 06-295152 [JP 6295152 A]
PUBLISHED: October 21, 1994 (19941021)
INVENTOR(s): IDERA KATSUYUKI
APPLICANT(s): TOKYO ELECTRON IND CO LTD [368085] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 05-083554 [JP 9383554]
FILED: April 09, 1993 (19930409)
INTL CLASS: [5] G09B-005/14; **G06F-015/20** ; G09B-005/06
JAPIO CLASS: 30.2 (MISCELLANEOUS GOODS -- Sports & Recreation); 45.4 (INFORMATION PROCESSING -- Computer **Applications**)
JOURNAL: Section: , Section No. FFFFFFFF, Vol. 94, No. 10, Pg. FFFFFFFF, FF, FFFF (FFFFFFFF)

ABSTRACT

PURPOSE: To provide the **computer training device** which **trains** many students **individually** and can be simplified in, specially, facility constitution.

CONSTITUTION: An instructor-side master terminal device 21 is equipped with plural slave terminal devices 221, 222... corresponding to the **individual** students and has a computer 24, a console panel 25, a display 26, a projector 27 for a large screen, and a microphone 28. Instructor-side instructions from the computer 24 and console panel 25 are sent to the slave equipment sides in a cascade state through a bus 30 for data transmission. Each slave equipment side receives the instruction from the master terminal device 21 by its internal CPU and performs switching **control** in its terminal device so that the instructions from the instructor can be received in common on the whole or by the students **individually** ; and computer data and speech of the students are sent from the terminal devices to the master terminal device 21 and confirmed by the instructor.

Set	Items	Description
S1	3595	AU=(KISHI T? OR KISHI, T?)
S2	14	S1 AND (GENETIC()ALGORITHM? OR EVOLUTIONARY()COMPUT? OR (C- OMPUTER? OR MACHINE) (N) (LEARN? OR TRAIN?) OR ANN OR NEURAL?)
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00667396 INSIDE CONFERENCE ITEM ID: CN006493270

Prediction of Chaotic AE Signals by a Neural Network

Grabec, I.

CONFERENCE: Progress in acoustic emission VI-11th International acoustic
emission symposium

PROGRESS IN ACOUSTIC EMISSION, 1992; VOL 6 P: 17-24

Japanese Society for Non-destructive Inspection, [1992]

LANGUAGE: English DOCUMENT TYPE: Conference Papers

CONFERENCE EDITOR(S): **Kishi, T.** ; Takahashi, K.; Ohtsu, M.

CONFERENCE SPONSOR: Japanese Society for Non-destructive Inspection

CONFERENCE LOCATION: Fukuoka, Japan

CONFERENCE DATE: Oct 1992 (199210) (199210)

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NOTE:

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DESCRIPTORS: acoustic emission; AE; non-destructive inspection

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00667422 INSIDE CONFERENCE ITEM ID: CN006493531

AE Source Waveform Analysis by Using a Neural Network

Yuki, H.; Homma, K.

CONFERENCE: Progress in acoustic emission VI-11th International acoustic
emission symposium

PROGRESS IN ACOUSTIC EMISSION, 1992; VOL 6 P: 235-242

Japanese Society for Non-destructive Inspection, [1992]

LANGUAGE: English DOCUMENT TYPE: Conference Papers

CONFERENCE EDITOR(S): **Kishi, T.** ; Takahashi, K.; Ohtsu, M.

CONFERENCE SPONSOR: Japanese Society for Non-destructive Inspection

CONFERENCE LOCATION: Fukuoka, Japan

CONFERENCE DATE: Oct 1992 (199210) (199210)

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DESCRIPTORS: acoustic emission; AE; non-destructive inspection

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00667450 INSIDE CONFERENCE ITEM ID: CN006493816

Virtual Calibration Method for Neural Source Location in Subsurface AE Measurement

Miyazaki, A.; Niitsuma, H.

CONFERENCE: Progress in acoustic emission VI-11th International acoustic emission symposium

PROGRESS IN ACOUSTIC EMISSION, 1992; VOL 6 P: 447-454

Japanese Society for Non-destructive Inspection, [1992]

LANGUAGE: English DOCUMENT TYPE: Conference Papers

CONFERENCE EDITOR(S): Kishi, T. ; Takahashi, K.; Ohtsu, M.

CONFERENCE SPONSOR: Japanese Society for Non-destructive Inspection

CONFERENCE LOCATION: Fukuoka, Japan

CONFERENCE DATE: Oct 1992 (199210) (199210)

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NOTE:

Described as proceedings. See also 4918.922 vol 10 no 3-4 for selected papers

DESCRIPTORS: acoustic emission; AE; non-destructive inspection

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